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P67299US0**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE  
PATENT REJECTION OVER A PENDING SECOND APPLICATION**

In re Application of: Simon Gerald HARDIN et al.

Application No.: 09/988,579

Filed: November 20, 2001

For: PROCESS AND SOLUTION FOR PROVIDING A CONVERSION COATING ON A METALLIC  
SURFACE II

The owner\*, Commonwealth Scientific and Industrial Research Organisation, of One Hundred percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending second application Application Number 09/988,578, filed on November 20, 2001, the term being defined in 35 U.S.C. 154 to 156 and 173, as shortened by any terminal disclaimer filed prior to the grant of any patent on the pending second application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the second application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of any patent granted on the second application, as shortened by any terminal disclaimer filed prior to the patent grant, in the event that any such granted patent: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by the court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. X The undersigned is an attorney of record.

January 7, 2004

Date

  
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X Terminal disclaimer fee under 37 CFR 1.20(d) is included.

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**Calculation of Total Chloride in Prior Art Document WO 96/15292 AI Examples 37-39**

I enclose detailed calculations for total chloride levels in examples 37-39 of the above prior art document.

The solution composition of the above examples is:

CeCl <sub>3</sub> .7H <sub>2</sub> O	13.2g/l
MnCl <sub>2</sub> .4H <sub>2</sub> O	50ppm
CuCl <sub>2</sub> .2H <sub>2</sub> O	10ppm
HCl	To pH 2.0
H <sub>2</sub> O <sub>2</sub>	1% v/v of a 30% w/w solution

The H<sub>2</sub>O<sub>2</sub> contributes no chloride to the solutions and is omitted from the following calculations.

Some relevant relationships between the various measures of concentration are:

$$\text{Concentration (ppm)} = \text{Concentration (mg/l)} \quad (1)$$

$$\text{Concentration (mg/l)} = \text{Concentration (g/l)} \times 1000 \quad (2)$$

$$\text{Concentration (g/l)} = \text{Concentration (mol/l)} \times (\text{Molecular Weight}) \quad (3)$$

It is assumed that all metal chloride salts and the HCl are fully ionised in solution to the metal cations, H<sup>+</sup> and Cl<sup>-</sup>. The concentrations are additive. Hence:

$$\begin{aligned} \text{Total Cl}^- \text{ concentration (mol/l)} = & \{3 \times \text{Concentration (CeCl}_3\cdot 7\text{H}_2\text{O)}\} \text{ (mol/l)} + \{2 \times \text{Concentration} \\ & \text{(CuCl}_2\cdot 2\text{H}_2\text{O)}\} \text{ (mol/l)} + \{2 \times \text{Concentration (MnCl}_2\cdot 4\text{H}_2\text{O)}\} \text{ (mol/l)} + \\ & \{\text{Concentration HCl}\} \text{ (mol/l)} \end{aligned} \quad (4)$$

It is also assumed that HCl has been added to the solutions to give a final pH of 2.0. Since the definition of pH is given as:

$$\text{pH} = -\log \{\text{Concentration (H}^+) \text{ (mol/l)}\} \quad (5)$$

It follows that:

$$\text{Concentration (H}^+) \text{ (mol/l)} = 10^{(-\text{pH})} \quad (6)$$

At pH 2.0, the concentration of H<sup>+</sup> = 10<sup>-2</sup> mol/l = 0.01 mol/l.

Since virtually all of the H<sup>+</sup> (>>99%) will arise from the added HCl, rather than the metal salts, the concentration of HCl needed to achieve pH 2.0 will be very close to 0.01 mol/l. This will give rise to an equivalent contribution of Cl<sup>-</sup> of 0.01 mol/l.

The Cl<sup>-</sup> contributions in g/l may be calculated from the respective contributions in mol/l by:

$$\text{Cl}^- \text{ Concentration (g/l)} = \text{Cl}^- \text{ Concentration (mol/l)} \times \{\text{Atomic Weight of Chlorine}\} \quad (7)$$

The value for the atomic weight of chlorine is 35.453, taken from the CRC Handbook of Chemistry and Physics, 61<sup>st</sup> Ed. Hence:

$$\text{Cl}^- \text{ Concentration (g/l)} = \text{Cl}^- \text{ Concentration (mol/l)} \times 35.453 \quad (8)$$

Using the above information, the table below summarises calculations for  $\text{Cl}^-$  concentrations in examples 37-39. The numbers in bold are the original data from which the other quantities have been calculated. Molecular weights were taken from the CRC Handbook of Chemistry and Physics 61<sup>st</sup> Ed.

**Table: Calculation of Chloride Concentrations in Examples 37-39, WO 96/15292 AI**

Component	Concentration (mg/l) = ppm	Concentration (g/l)	Molecular Weight of Component	Concentration (mol/l)	Chloride Contribution (mol/l)	Chloride Contribution (g/l)	Chloride Contribution (mg/l) = ppm
$\text{CeCl}_3 \cdot 7\text{H}_2\text{O}$	13200	<b>13.2</b>	372.59	0.03543	0.10629	3.7683	3768.3
$\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$	50	0.05	197.91	0.0002526	0.0005052	0.0179	17.9
$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$	10	0.01	170.47	0.00005866	0.0001173	0.0042	4.2
HCl	364.6	0.3646	36.46	0.01	0.01	0.3545	354.5
Total	N/A	N/A	N/A	N/A	0.11691	4.1448	4144.8

From the table, it may be seen that the  $\text{Cl}^-$  contributions from the Mn and Cu salts is only 22.1 ppm. However, the major contribution comes from the cerium chloride, followed by the HCl. The total  $\text{Cl}^-$  concentration is over 4000ppm, well above the upper limit of  $\text{Cl}^-$  specified in the current application 09/988,579.

Yours sincerely

Simon Hardin